radiation or cytotoxic drug in this cell cycle phase.
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AN 2005062917 EMBASE
TI Strong and rapid induction of osteoblast differentiation by Cbfa1/Til-1 overexpression for bone regeneration.
AU Kojima H.; Uemura T.
CS T. Uemura, Age Dimension Research Center (ADRC), Natl. Inst. Adv. Indust. Sci. Tech., Tsukuba Central-6, 1-1-1 Higashi, Tsukuba, Ibaraki, 305-8566, Japan. t.uemura@aist.go.jp
SO Journal of Biological Chemistry, (28 Jan 2005) Vol. 280, No. 4, pp. 2944-2953. .
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AB Core binding factor α-1 (Cbfa1), known as an essential transcription factor for osteogenic lineage, has two major N-terminal isoforms: Pebp2αA and Til-1, To study the roles of these isoforms in bone regeneration, we applied an adenoviral vector carrying their genes to transduce primary osteoprogenitor cells in vitro and in vivo. Overexpression of the two isoforms induced rapid and marked osteoblast differentiation, with Til-1 being more effective in vitro, by examination of the alkaline phosphatase activity, calcium content, and Alizarin red staining. Til-1 overexpressing cells/porous ceramic composites were transplanted into subcutaneous and bone defect sites in Fischer rats (cultured bone transplantation model) and markedly affected in vivo bone formation and osteoblast markers. The results demonstrated that the reconstitution of bone tissues, such as cortical bone and trabecular bone was accelerated by implantation of Til-1 overexpressing cells/porous ceramic composites. Moreover, the new bone formation by Til-1 overexpression appeared to reflect replacement of new bone within the implant boundaries. To ascertain whether implanted Cbfa1 overexpressing cells could differentiate into osteogenic cells to create bone or whether it stimulated the surrounding recipient tissue to regenerate bone, implanted male donor cells were visualized by fluorescent in situ hybridization analysis. The proportion of implanted cells in the presumptive bone forming region was over 80% and did not change throughout from 3 days to 8 weeks after implantation. These findings suggested that the newly formed bone in the porous area of the scaffold is mostly produced by the implanted donor cells or their derived cells, effectively by Til-1 overexpression.

=> D His

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L3 160 S L1 OR L2
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